

DESCRIPTIONS OF NEW MOSQUITOS FROM SOUTH AMERICA

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The material dealt with in the present paper consists largely of Culicidae collected by Dr. A. Aiken Clark on the River Amazon during his voyages to and from Manáos ; other specimens were taken or reared at Manáos by Dr. H. Wolferstan Thomas and by Dr. R. M. Gordon, and in Venezuela by Dr. M. Núñez Tovar. All of the seven species are members of the genus *Culex* and all but one belong to the sub-genus *Choeroporpha*, Dyar, the members of which are small and difficult to separate on external characters ; the seventh appears to belong to *Mochlostyrax*, Dyar and Knab, a closely allied sub-genus.

Culex (Choeroporpha) innominatus, sp.n.

MALE

Head. Occiput covered with loose, flat, whitish scales with golden reflections ; except a small median triangular area, widest behind, with narrow, curved, whitish scales ; flat scales continuous in front. Upright, forked scales intermixed with the flat ones above, yellow on anterior, black on posterior half. Palpi exceeding the proboscis by the length of the last segment and almost one-half the length of the penultimate segment. Proboscis and palpi clothed with blackish-brown scales. *Thorax.* Prothoracic lobes with yellowish setae above and black ones below. Mesonotum with integument varying from ochraceous-brown to dark olivaceous-brown ; covered with golden-brown, narrow, curved scales with brassy or bronzy reflections according to the direction in which viewed. Scales at sides of ante-scutellar space and on scutellum brassy. Pleurae with a narrow strip of flat white scales on sternopleura ; one lower mesepimeral bristle present. *Legs.* Clothed with very dark, blackish-brown scales with purplish reflections ; femora pale beneath. *Wings.* Distal half of vein I,

apical halves of forks of veins II and IV and apex of vein III with dense broad scales; lateral squames (Christophers 1923) in these positions with 7 to 9 striae and the width sometimes exceeding one-third of the length (from insertion to tip). *Abdomen*. Dorsum with narrow, basal, white bands, present on segments 2 to 7 in one specimen, on segments 3 to 7 in two specimens and on segments 4 and 5 in one specimen; in the fifth specimen the abdomen was lost, but it was recorded that bands were present on all but the first segment.

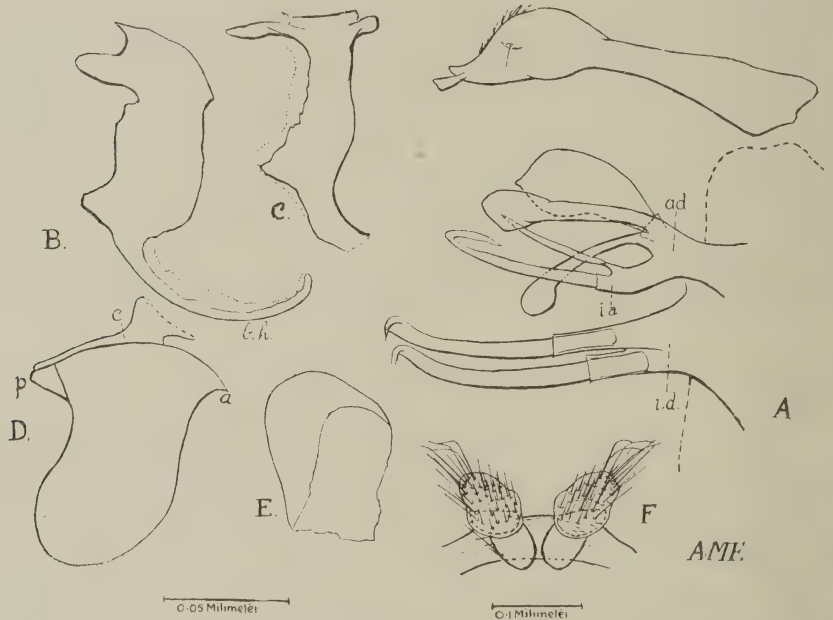


FIG. 1. *Culex (Choeroporpa) innominatus*, n.sp. Details of male hypopygium, drawn from stained preparations. A. Clasper and lobes of side-piece. *i.a.*—inner arm of outer division; *i.d.*—inner division of lobe of side-piece; *a.d.*—outer division of lobe of side-piece. B and C. Lateral plate of phallosome, lateral aspect, under different conditions of pressure. *b.b.*—basal hooks. D. Basal apodeme, flattened by pressure. *a.*—angle which articulates with parameral plate; *c.*—chitinous connection with basal arm of tenth sternite; *p.*—basal projection. E. Plate at base of side-piece. A—E to the same scale.

HYPOPYGIUM (fig. 1). The important features by which this species may be distinguished are shown in the accompanying illustration. The appendages of the outer division of the lobe of the side piece (fig. 1, A, *a.d.*) are two filaments with enlarged rounded apices and a leaf. The lateral plates of the phallosome (Christophers and Barraud, 1923) (fig. 1, B and C) even when mounted

in lateral aspect exhibit a remarkable diversity of form owing to slight differences in orientation, the shape and relative sizes of the horns or teeth appearing totally unlike in different specimens as shown by the illustrations. The basal apodeme (*ibid.*) (fig. 1, D) is subject to variation in shape according to the direction and amount of pressure put upon it. The projecting portion (*p.*) is curved at right angles to the plane of the rest of the plate, and unless the structure is completely flattened out, a greater or less degree of foreshortening results. The thin, indefinite piece of chitin (*c.*) forms a connection between the basal apodeme and a lateral projection from the base of the tenth sternite. The relative position of the 'plate at the base of the side piece' and the basal apodeme may be seen by referring to fig. 6, c.

Wing length: *c.* 2.4 mm.

Paratypes: 2 ♂♂ taken on River Amazon, 1915, Dr. A. Aiken Clark. Co-types: 2 ♂♂ taken at Palo Negro, Venezuela, 30.VIII.22, and 1 ♂ taken at Mariara, Estada Carabobo, Venezuela, 11.VIII.22, Dr. M. Núñez, Tovar.

Culex (Choeroporpa) clarki, sp.n.

MALE

Head. Occiput entirely clothed with flat, rather closely appressed scales and a few upright, forked ones above. Flat scales appearing dark bluish-grey when viewed from above but changing to greyish white, dark sepia, or golden when the head is rotated, recalling the head scales of certain species of *Wyeomyia*. A small patch of creamy-white scales at lateral angles. Upright, forked scales consisting of a very few pale yellow ones on the anterior half, and more numerous black ones behind. Palpi exceeding the proboscis by almost the length of the last two segments. Palpi and proboscis with very dark blackish-brown scales. *Thorax.* Prothoracic lobes with long, coarse, dark brown setae. Mesonotum. Integument dark sepia, clothed with dark, bronzy, narrow, curved scales. Scutellum with integument of lobes as that of the mesonotum, but integument between the lobes tawny; scales with brassy reflections. Pleurae with two conspicuous roundish patches of flat white scales, one on each side of the upper half of the suture separating the sternopleura from the mesepimeron, and an elongated patch below on

the sternopleura. One large mesepimeral bristle present. *Legs* very dark scaled. *Wings*. Apex of vein I, apical half of the forks of vein II, apex of vein III and apices of forks of vein IV, densely clothed with short broad scales, the greatest width of the lateral squames about one-third or slightly less than one-third the length, widest on apical third and with from 5 to 7 (very rarely 8) striae. *Abdomen*. Dorsum entirely clothed with dark, blackish-brown scales. Laterally, last three segments with small basal, white, triangular spots. Venter with segments 4, 5 and 6 (and possibly 7) with proximal white bands, narrow on segment 4, nearly half the width of the segment on 5 and 6.

Wing length : *c.* 2.6 mm.

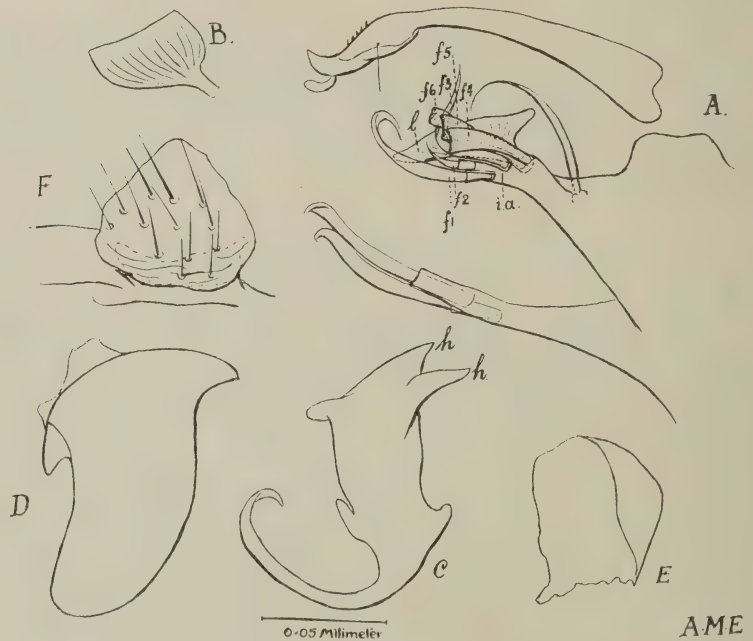


FIG. 2. *Culex (Choeroporpa) clarki*, sp.n. Details of male hypopygium, drawn from stained preparations. A. Clasper and tip of side-piece with lobes. *f.1* to *f.6*—filaments on outer division of lobe of side-piece; *i.a.*—inner arm of outer division of lobes; *l.*—leaf. B. Leaf of outer division in profile. C. Lateral plate of phallosome with basal hooks, lateral aspect. *b.b.*—apical dorsal horns. D. Basal apodeme flattened by pressure. E. Plate at base of side-piece. F. One of ninth tergites.

HYPOPYGIUM (fig. 2). The enlarged distal portion of the clasper is evidently comparatively narrow, but as it appeared collapsed in all the preparations, it is possible that it is really wider than as

shown in fig. 2, A. The appendages of the outer aspect of the outer division of the lobe of the side piece are somewhat complicated. Arising next to the inner arm is a rather long pointed and curved filament (*f.3*) partly hidden (in fig. 2, A) by the three curved filaments (*f.4*, *f.5*, and *f.6*), which are superimposed one above the other; the striated leaf (*l.*) arises from a large insertion, has the surface undulating, and projects almost at right angles to the axis of the lobe and the other appendages. In consequence of this, the true shape of the leaf cannot be seen in preparations mounted to show the filaments; fig. 2, B, was therefore drawn from the specimen when orientated to display the leaf, before mounting in the position shown in fig. 2, A. The two dorsal horns of the phallosome are large and prominent and the small projection on the ventral side near the base seems to be a constant feature. The ninth tergites are separated by a distance slightly less than the width of one of them (fig. 2, F).

Wing length: *c.* 2.6 mm.

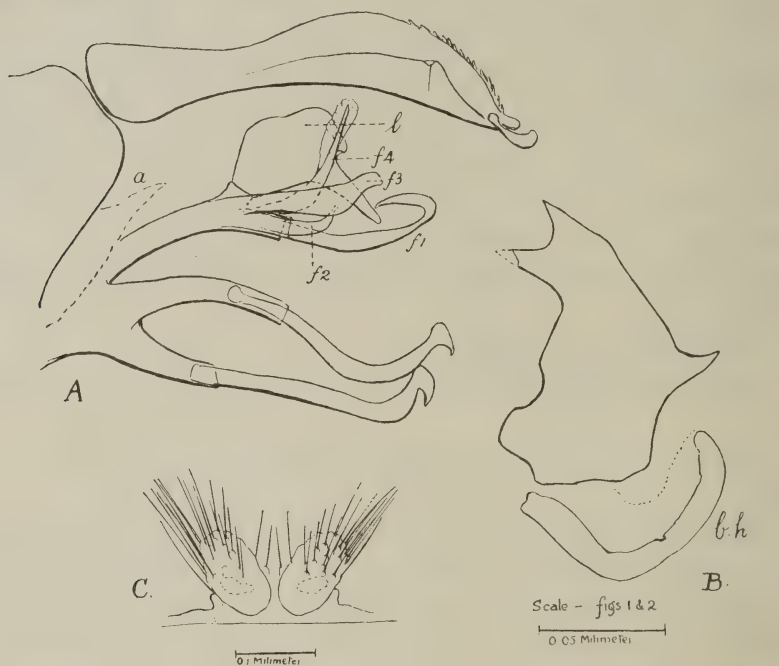
Paratypes: 4♂♂ taken on River Amazon, 1915, Dr. A. Aiken Clark.

Culex (Choeroporpa) tovari, sp.n.

MALE

Head. Occiput mostly covered with flat, whitish scales with pale, yellow reflections; whitish, narrow, curved scales occupying a median triangular area, widest behind, converging to a point in front where a tuft of narrow, curved scales projects between the eyes. Palpi and proboscis with dark brown scales; somewhat denuded proximally. Last segment of palpi wanting, penultimate segment extending beyond the proboscis by slightly less than half its own length. *Thorax.* Prothoracic lobes mostly denuded. Mesonotum shining, dark olivaceous-brown; almost entirely denuded, but a few isolated yellowish, narrow, curved scales remaining. Scutellum tawny-brown with a few brassy, narrow, curved scales. Pleurae with a roundish patch of flat, white scales on the sternopleura above and another on the upper part of the mesepimeron, also an elongate patch before the posterior margin of the sternopleura below; one lower mesepimeral bristle present. *Legs.* Mostly wanting; one mid-leg complete; dark brown scaled. *Wings.* Lateral squames on distal parts of veins II, III, and IV, markedly

narrower than in the two preceding species, the usual number of striae being only five and the length from three-and-a-half to four times the greatest width. *Abdomen*. Dorsum: segments 2 to 7 with narrow basal, whitish bands, expanding laterally. Venter with white scales at bases of segments.



AME

FIG. 3. *Culex (Choeroporpa) tovari*, sp.n. Details of male hypopygium, drawn from stained preparations. A. Clasper and lobes of side-piece. *a*.—artefact; *f.1* to *f.4*—filaments of outer division of lobe of side-piece; *l*.—leaf. B. Lateral plate of phallosome, lateral aspect with basal hooks (*b.b.*) detached. C. Ninth tergites. A and B to the same scale.

HYPOPYGIUM (fig. 3). The leaf on the outer aspect of the outer lobe of the side piece (fig. 3, A), is markedly asymmetrical and undulating; distally the margin is curled so that the outline changes considerably with slight changes in the orientation. A marked feature is the striated membranous expansion surrounding the apical part of the filament (*f.4*). The short filament (*f.2*) is closely associated, if not fused, basally with the long filament (*f.1*)

so that under a low magnification it appears to be a small basal branch of the latter. The basal apodemes are not well displayed in the slide, they appear to be rather wider distally than in the preceding species (fig. 2, D). The plate at the base of the side piece resembles that of *C. manaosensis* (fig. 5, D).

Wing length: *c.* 2.8 mm.

Type: one ♂ from Palo Negro, Venezuela, 30.VIII.22, Dr. M. Núñez Tovar.

Culex (Choeroporpa) gordonii, sp.n.

MALE

Head. Occiput clothed with flat, whitish scales with pink and brassy reflections; the numerous upright, forked scales, yellow in front, black behind. One palp present measuring 1.6 mm., the last two segments equal in length; scales brown. Proboscis incomplete. *Thorax.* Prothoracic lobes with blackish integument. Mesonotum with integument very dark blackish brown (dark olivaceous at sides with magnification of about forty times); clothed with narrow, curved, bronzy scales; bristles long, blackish. Scutellum olivaceous brown, with dull greyish-yellow scales. Pleurae very dark blackish grey; one lower mesepimeral bristle present. *Legs.* Dark brown scaled. *Wings* with the lateral squames on the apical parts of veins II, III and IV, rather broad and dense; widest type of scales in these positions with eight striae, width sometimes more than one-third of the length. *Abdomen.* Scales of dorsum brown with coppery reflections, segments 4, 5, 6 and 7 with small lateral, triangular, white spots.

HYPOPYGIUM (fig. 4). The most characteristic feature is the greatly expanded apex of the phallosome plate (fig. 4, B) which is furnished with a double row of teeth along its distal edge. The phallosome is very closely associated with the parameral plates (not shown in the figure). The outer division of the lobe of the side piece is furnished on its outer aspect with four filaments: *f.1*, *f.2*, *f.3* and *f.4*, the last named being almost obscured (in the figure) by the others. The basal apodeme is very similar to that of *C. clarki* (fig. 2, D). Tenth sternites with about twelve very delicate teeth.

Wing length: *c.* 2.1 mm.

Type: ♂ bred from a pool at the Bosque, Manáos, 29.XII.21, Dr. R. M. Gordon.

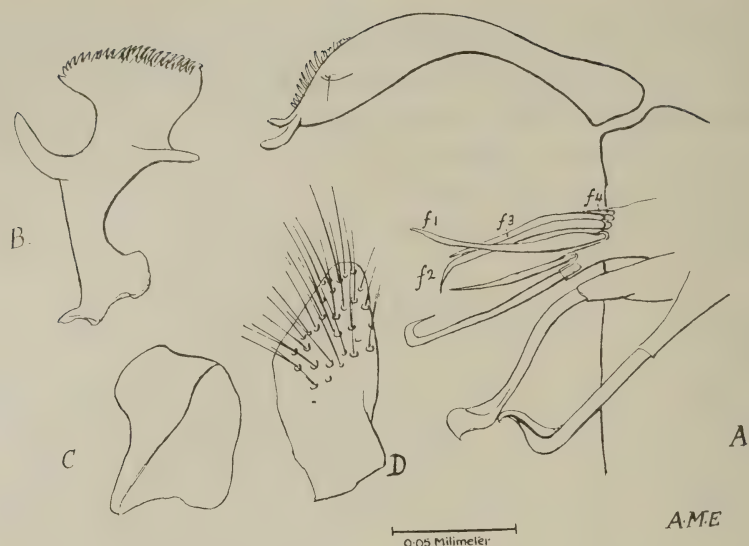


FIG. 4. *Culex (Choeroporpa) gordonii*, sp.n. Details of male hypopygium, drawn from unstained preparations. A. Apex of side-piece with clasper and lobes. *f.* 1 to *f.* 4—filaments on outer aspect. B. Lateral plate of phallosome, lateral aspect, basal hooks omitted. C. Plate at base of side-piece. D. One of the ninth tergites.

This species evidently comes near to *C. (Choeroporpa) educator*, Dyar and Knab, but I have hesitated to identify it with that species because, although the description of the mesosome (Dyar, 1920) might possibly apply to the Manáos specimen, if Dyar's figure (1918, Pl. IV, fig. 17) represents this structure in lateral view, the two species are clearly distinct.

Culex (Choeroporpa) manaosensis, sp.n.

MALE

Head. Occiput covered with flat whitish scales with metallic reflections except a triangular area of narrow, curved, whitish scales converging to a median tuft projecting between the eyes; upright, forked scales numerous, black. Palpi and proboscis covered with very dark, blackish-brown scales. Last segment of each palp missing, but penultimate segment extending beyond the proboscis by about one-half of its own length. Long hairs of antennae blackish-brown. *Thorax.* Prothoracic lobes very dark, with black bristles. Mesonotum with integument shining blackish-

brown; scales bronzy; that of scutellum and ante-scutellar space olivaceous-brown. Pleurae olivaceous-brown, a row of flat white scales at posterior border of sternopleura; bristles black, rather fine, one lower mesepimeral bristle. *Legs.* Fore and mid legs with blackish scales, hind legs missing. *Wings* with widest lateral squames on veins II, III and IV mostly with seven, rarely with eight striae. *Abdomen.* Dorsum with blackish-brown scales; all but first three segments with small, triangular, lateral, whitish spots. Venter with basal, whitish bands.

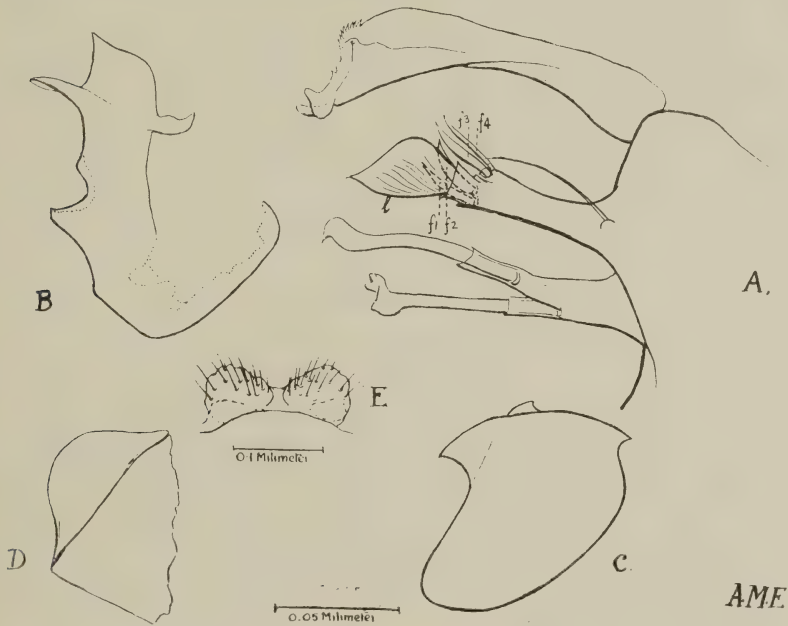


FIG. 5. *Culex (Choeroparva) manaosensis*, sp.n. Details of male hypopygium, drawn from stained preparations. A. Apex of side-piece with clasper and lobes; *f. 1* to *f. 4*—filaments of outer division; *l.*—leaf. B. Lateral plate of phallosome with basal hooks, lateral aspect. C. Basal apodeme, flattened by pressure. D. Plate at base of side-piece. E. Ninth tergites. A—D to the same scale.

HYPOPYGIUM (fig. 5). The leaf borne by the outer division of the lobe of the side piece (fig. 5, A, *l.*) is stiff and erect with a very prominent insertion; in the figure it obscures two of the four short, pointed filaments (*f.1* and *f.2*) which are indicated by dotted lines. The tenth sternites have about twelve teeth.

Wing length: *c.* 2.5 mm.

Type: one ♂ taken on the Wharf, Manáos, 5.XII.23, Dr. A. Aiken Clark.

Culex (Choeroporpa) thomasi, sp.n.

MALE

Head. Occiput covered with flat, whitish scales with yellow reflections; except a median triangular area, widest behind, converging to a point in front occupied by whitish, narrow, curved scales, a tuft of narrow, curved scales projecting between the eyes. Upright, forked scales yellow in front, black behind. Palpi and proboscis covered with rather light, brown scales; palpi exceeding proboscis by the length of the last segment and half the preceding one. *Thorax.* Prothoracic lobes with blackish bristles. Mesonotum with ochraceous-brown integument and golden, narrow, curved scales. Scutellar scales brassy, bristles brown with golden reflections. Pleurae purplish-brown, light tawny around sutures, partly denuded, a row of flat, white scales along the posterior border of the sternopleura; one lower mesepimeral bristle. *Legs* unbanded, clothed with brown scales with coppery reflections. *Wings* with the widest lateral squames on veins II, III and IV with seven striae and the greatest width in many cases more than one-third of the length. *Abdomen.* Dorsum with dark brown scales and on segments 2 to 6, well defined, whitish, basal bands, narrow on second segment; segments 7 and 8 with irregular, basal, whitish bands.

HYPOPYGIUM (fig. 6). The claspers have not been figured, as the distal portions are collapsed in the preparation. In a sketch made before mounting, the distal third is rather abruptly widened, the eye-like spine and the sub-apical appendage are present, and the narrow terminal portion of the clasper is upturned as in most of the species here dealt with.

Wing length: *c.* 2.2 mm.

Type: one ♂ bearing the data 'Swamp water from Amatory, Manáos, Dr. H. Wolferstan Thomas,' 1910.

This specimen was determined on external characters as *Culex (Melanoconion) humilis*, Theo., but as the hypopygial characters showed that it was not a *Melanoconion*, the determination seemed open to doubt. Mr. F. W. Edwards kindly compared the external characters with the type of which he says 'only the head and wing are much use for comparison.' Mr. Edwards mentioned certain differences between the two specimens, and in view of these differences, and the condition of the type specimen, it seems safer

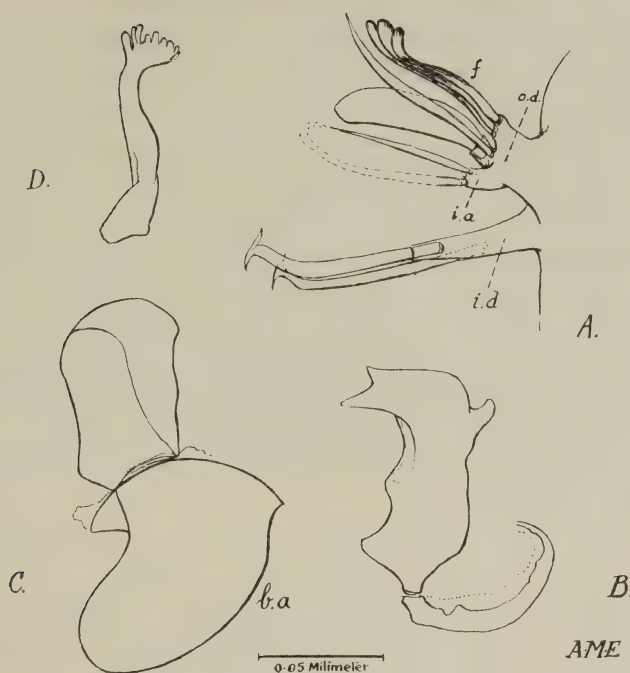


FIG. 6. *Culex (Choeroporpa) thomasi*, sp.n. Details of male hypopygium, drawn from stained preparations. A. Lobes of side-piece. *i.a.*—inner arm of outer division; *i.d.*—inner division; *f.*—group of three filaments; *o.d.*—outer division. B. Lateral plate of phallosome with basal hooks, lateral aspect. C. Basal apodeme (*b.a.*) and plate at base of side-piece. D. Tenth sternite.

to regard the specimen from Manáos as a distinct species. The fact that the type was taken at San Paulo is an additional reason for adopting this course.

Another specimen determined as *M. humilis*, Theo. was a true *Melanoconion*, which I have identified with *C. (Melanoconion) dunni*, Dyar. Mr. Edwards found that it was specifically distinct from the type of *M. humilis*, Theo.

Culex innovator, sp.n.

MALE

Head. Occiput mostly covered with flat, whitish scales, with pale yellowish and pink, metallic reflections, appearing bluish grey in certain lights. A broad, median patch of narrow, curved, whitish scales behind extending less than half-way to the anterior margin.

Upright, forked scales all dark. Palpi and proboscis brown scaled. Palpi exceeding the proboscis by nearly the length of the last two segments. *Thorax*. Prothoracic lobes tawny with brown bristles. Mesonotum with integument bright ochraceous-brown, covered with very small, dark-brown, narrow, curved scales with golden reflections. Scutellum tawny, scales with brassy reflections. Pleurae pale fawn-coloured; an elongate patch of flat, white scales along the posterior border of the sternopleura, one lower mesepimeral bristle. *Legs* dark-brown scaled. *Wings* with widest lateral squames not as broad as in *C. innominatus*, those on veins II, III and IV not exceeding six striae and having the greatest width less than one-third of their length. *Abdomen* dark-brown scaled above, segments 4, 5 and 6, with small, basal, lateral, triangular, pale spots, segment 7 with basal, lateral, pale spots tending to form an irregular band, segment 8 variable.

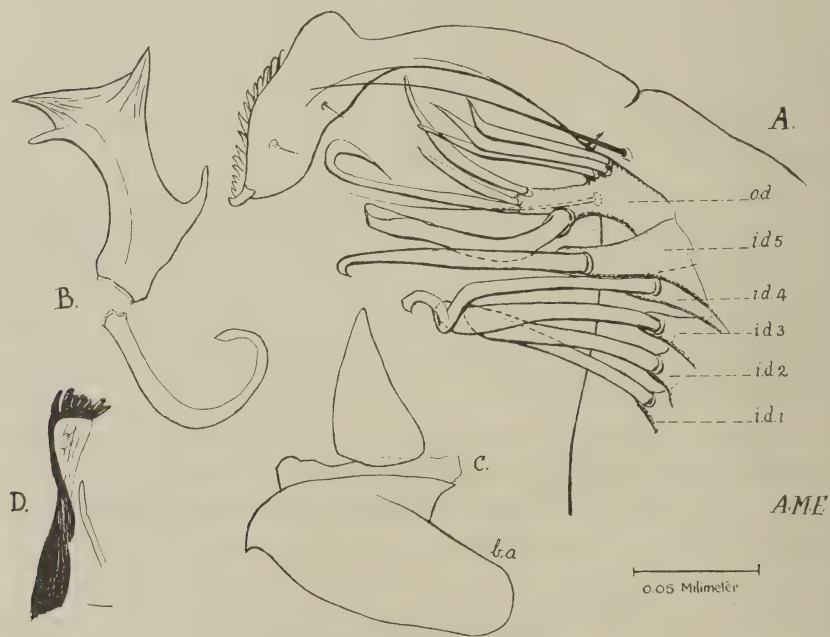


FIG. 7. *Culex innovator*, sp.n. Details of male hypopygium, drawn from stained preparations. A. Apex of side-piece with clasper and lobes. *i.d.* 1 to *i.d.* 5—inner divisions of lobe of side-piece; *o.d.*—outer division. B. Lateral plate of phallosome with basal hooks, lateral aspect. C. Basal apodeme and plate at base of side-piece. D. Tenth sternite.

HYPOPYGIUM (fig. 7). The most marked feature is the greatly sub-divided inner division of the lobe of the side-piece. It consists

of five distinct divisions (*i.d.* 1 to *i.d.* 5) arranged obliquely to the axis of the side-piece. The three innermost divisions (*i.d.* 1 to *i.d.* 3) bear at their extremities long, flattened filaments gradually widening distally and obliquely rounded. The extremities of these filaments lie in close proximity, so that it is difficult to display them separately in mounting them. The fourth division (*i.d.* 4) alone bears a filament or rod similar to those borne on the inner division of the side-piece in species of *Choeroporpa* (figs. 1 to 6, A). The striated appearance of the chitin forming the teeth of the plates of the phallosome (fig. 7, B) appears to be a constant feature.

Wing length : *c.* 2.4 mm.

Paratypes : three ♂♂ from the River Amazon, 1915, Dr. A. Aiken Clark.

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